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USING THE REACT LEARNING MODEL TO REDUCE STUDENT ANXIETY IN LEARNING MATHEMATICS

Martina Srimega Sitorus[1], Melda Jaya Saragih[2]
[1,2)]Universitas Pelita Harapan, Tangerang, BANTEN

Correspondence email: martinasitorus24@gmail.com

ABSTRACT

Mathematical anxiety is an emotional response to the entire mathematical activity that affects students' mathematical to psychological abilities. This anxiety is influenced by a variety of factors such as negative perspectives on mathematics, experiences of failing in learning mathematics and others. Research data obtained through questionnaire one Christian High School in Tangerang showed that class X social studies students experienced mathematical anxiety where students had difficulty concentrating, anxiety, unconfidentness, headaches when learning mathematics. Anxiety affects students' self-confidence and makes the learning process not optimal so it needs to be reduced. The selection of *the REACT* model as a solution to this problem leads to varied, contextual and collaborative learning. The purpose of this writing is to find out the application of the *REACT* model in reducing mathematical anxiety of X social studies students in the Absolute Value Equation material. The method used in the research is descriptive qualitative, where data is collected through questionnaires. The results obtained show that the stages in the *REACT* model, namely *relating, experiencing, applying, cooperating,* and *transferring* succeeded in reducing the anxiety of class X social studies students towards learning mathematics. During the application of the model students are seen concentrating while studying, confident, daring to ask questions and others. The application of the *REACT* model can be a solution for teachers to manage mathematical anxiety while leading students to realize their identity as an *imago dei* who has been reconciled to God in Jesus Christ. Students are endowed with a Divine capacity to do God's work. Reflecting on the implementation of the REACT model, the authors suggest recognizing the characteristics as well as collaborating the *REACT* model with other learning resources.

Keywords: mathematics anxiety, REACT model learning, Imago dei

INTRODUCTION

One of the internal factors of the student's psychological that influences the learning process of mathematics is mathematical anxiety (Muqorobin & Triana, 2022). Khasawneh, Gosling, & Williams (2021) convey that mathematical anxiety affects mathematical ability in various conditions both in everyday life and the learning process. Because, anxiety is a psychological response that is naturally apparent when faced with a problem (Faried & Nashori, 2013). In line with that, Saputra (2014) said that mathematical anxiety is a manifestation of feelings of anxiety, fear, dislike that arise when participating in mathematics learning.

Christianity does not turn a blind eye to the existence of anxiety in man. The Christian faith believes and realizes that such anxiety does not lead people to problem solving (Psalm 46). In the learning process, anxiety affects human design created as beings who have the ability and capacity to learn (Redgrave, 2002). Just as if the existence of mathematical anxiety leads students to avoid mathematical things, then students will never come to a problem solving. Awareness of this is only obtained if you have the knowledge of the great God and the helpless man (Adhinarta, 2021).

Christianity believes that God created man in His image (Gen. 1:26-27). God created and prepared man with a Divine capacity to do good works (Murray, 1901). Humans are created to have reason, high cognitive abilities and a moral character that can develop (Williamson, 2017). So it should be through the knowledge of God in Christ, that man realizes that anxiety is not a leader over his thoughts and actions. Sensitivity to the existence of anxiety that exists in oneself can lead humans, especially students, to the realization that in the process of learning there are still many things that need to be improved and developed.

Many factors that shape anxiety about mathematics are negative views of mathematics and mathematics teachers, poor learning experiences, insecurity and low mathematical ability of students (Africk, Tobias, Kogelman, & Warren, 1981). This is in line with the reality in the field where some previous research results show that there are still many students who do not like mathematics, consider mathematics difficult, impractical, boring and require a high level of ability to learn it (Siregar, 2017; Yeni, 2015). If the experience continues to occur both in the short and long term, a "vicious circle" will be formed which becomes a stimulus for the formation of anxiety about mathematics in students (Ramadan, 2019). As a result, even though the student has tried more, the effort will not work optimally to build his mathematical understanding. (Soleh, Candiasa, & Widiartini, 2014; Auliya, 2013). Mathematical anxiety can also lead students to avoid mathematical things which also include learning mathematics (Kristanti, 2009). Therefore, it is important to build a good interpersonal experience for students in learning mathematics.

As far as the interaction with class X social studies students during the implementation of field teaching practices on July 25 to August 26 at one Christian high school in Tangerang district, researchers suspect that they experienced anxiety in learning mathematics. The researcher then gave a questionnaire after conducting observations in the second week on August 08 to prove the presumption to X social studies students, which numbered 19 students. Referring to the results of filling in the mathematical anxiety questionnaire when studying the topic "Equations and Absolute Value Calculations of One Variable", it was obtained that 68.5% of students had difficulty concentrating, 68.4% of students expect failure of work related to mathematics, 68.4% of students experience confusion, 52.6% of students feel unable to solve math problems, 78.9% of students feel confident only when able to understand the material and solve problems, 52.7% of students refused to do questions in front of the class, 42.1% of students were afraid to ask teachers or friends, 36.9% were afraid while participating in learning, 42.1% of students felt restless while studying mathematics, 63.2% of students *overthinking,* 15.8% of students felt nauseous,

63.2% of students felt headaches while studying mathematics, and 73.7% of students experienced a rapid heartbeat while taking a quiz or n math exams. The above results show that X social studies students experience anxiety about learning mathematics and make the learning process not optimal so that it needs to be reduced.

The effectiveness of mathematics learning can be optimized by helping students reduce their anxiety about mathematics. According to Ramadan (2019) several things that can reduce mathematical anxiety are: (1) explaining the importance of learning mathematics, (2) fostering self-confidence by inviting students to practice doing problems together, (3) eliminating negative perspectives on mathematics by providing images and examples ranging from simple to complex related to the material studied, (4) teaching with various methods that can accommodate sharing learning styles students, (5) teach concepts instead of rote memorization, (6) create comfortable and fun classes and (7) cultivate a sense of responsibility for their success. Based on the explanation above, the REACT learning model is considered capable of being one of the right tools to apply these things.

The *REACT* model is a learning model with several stages, namely (1) *relating, experiencing, applying, cooperating,* and *transferring.* At the stage *of relating* students are directed to relate the material to previous knowledge or in a real-life context. In line with the statement of Cahyono, Sutarto, & Mahardika (2017) that *REACT* is a learning model that leads students to find the meaning of the lesson and see its relevance in everyday life. At the experiencing stage , students are taught concepts with various methods that are relevant to the learning context. This is in line with the results of research at Kemala Bhayangkari High School that the REACT model has proven to be one of the solutions in instilling students' understanding of mathematical concepts (Lestari, Sahputra, & Lestari, 2021). At the *applying stage,* students are given the opportunity to practice questions to apply the concepts that have been obtained. At the *cooperating* stage students are given a study room together with friends in a study group. According to Wahyuni (2016) learning that involves students actively and interactively with group learning is one way to create *joyful learning*. At the transferring stage , students are introduced to a new context in applying the concepts learned so that they can more clearly see the importance of studying the material. Looking at the entire stages of the REACT model, Wahyuni, Yati, & Fadila (2020) stated that all of the stages in this model are considered interesting and effective in achieving successful mathematics learning. Thus, these five stages can be used by teachers as *tools* to reduce students' anxiety about mathematics.

LITERATURE REVIEW

Mathematical Anxiety

Mathematical anxiety is a feeling that arises as a response to discomfort or emotional reactions when facing mathematical problems such as assignments or exams (Anugrah, Kusmayadi, & Fitriana, 2019). Agreeing with that, mathematical anxiety is a form of uncomfortable feelings towards mathematical activities (Rizki, Rafianti, & Marethi, 2019). According to Waheed & Mohamad (2011) mathematical anxiety is one of the factors that influence students' attitudes in mathematics learning. Mathematical anxiety tends to lead

students to avoid learning and not be able to learn mathematics (Tatiana, Pranuta Murnaka, & Wiyanti, 2018). This is because math anxiety is a form of students' inability to adapt to mathematics lessons which causes students to find it difficult to learn and feel unable to learn it (Anita, 2014). Thus, it can be concluded that mathematical anxiety is part of the affective realm in mathematics which appears to be a manifestation of uncomfortable feelings as well as a form of inability to carry out mathematical activities. If not managed properly, then students find it difficult to adapt and feel unable to learn mathematics. In line with the understanding of Fadilah & Munandar (2019) that this anxiety needs to be studied to improve the quality of learning because it makes students unfocused and difficult to accept and understand the teacher's explanation.

Some of the research results put forward the reasons that cause the formation of mathematical anxiety, namely students' mathematical backgrounds that are lacking, experiences of failing in mathematics, study habits by relying on formulas, applications and problems learned unrelated to real life, lack of concrete material exposure, personality types, negative approaches to mathematics, lack of confidence, fear of not achieving graduation criteria, and inappropriate feelings and thoughts from those around (Mutlu, 2019; Mutodi & Ngirande, 2014; (Africk et al., 1981)). According to Sari, Zakiyah, & Dewi (2021) a person's personality is a predisposing factor to the onset of anxiety. In line with that, Winarso (2014) said that the 4 personality types of students, namely choleric, sanguine, melancholy and sanguine affect the excretion of attitudes and behaviors when in a condition including in the learning process. These things will affect the cognitive, affective, behavioral and physiological realms of students in mathematics learning (Olango, 2016).

Istikomah & Wahyuni (2018) divides indicators of mathematical anxiety in the cognitive realm, namely difficulty concentrating, self-confidence, self-ability, expecting failure of the affective realm, namely anxiety and feeling nauseous, and physiological will experience dizziness, heart rate & excessive sweating. Diana, Marethi, & Pamungkas (2020) conveyed indicators of students experiencing mathematical anxiety if (1) the cognitive realm is difficult to concentrate and low self-ability, (2) the affective realm by feeling restless, *overthinking*, nausea, not enjoying mathematics, and (3) the physiological realm, namely headaches, cold sweats, faster heart beats. The same thing was also conveyed by Aprillia & Lestari (2022) that the indicators of mathematical anxiety are as follows, namely expecting failure, not being confident, anxious, nervous, palpitating, restless and not liking mathematics. Setiawan, Pujiastuti, & Susilo, (2021) also said that the indicators of students experiencing mathematical anxiety are fear to do something, not wanting to do things that have been done before, expecting difficulties, anxiety, confusion, difficulty breathing, faster heart rate, feeling uncomfortable. Based on the exposure to the theory of mathematical anxiety indicators above, the indicators that will be used in this study cover 3 domains, namely cognitive, affective, and physiological/somatic as follows:

Table 1. Math anxiety indicators

Domains	Indicators
Cognitive	Concentration
	Expecting failure
	Confused
	Self-ability
	Confidence
Affective	Fear
	Restless
	Overthinking
Somatic/physiological	Nauseous
	Headache/dizziness
	Fast heart rate

These indicators are the result of synthesis that has been presented by several experts with the consideration that they have been used by more than 2 experts in previous studies and the indicators can be identified by students through the signs experienced while learning mathematics through filling out questionnaires to see their anxiety.

REACT Learning Model (Relating, Experiencing, Applying, Cooperating, Transferring)

REACT is an acronym for *relating, experiencing, applying, cooperating,* and *transferring. REACT* is one of the learning models of the concept of contextual learning based on the philosophy of constructivism (Fatimah, 2022). In its application, the REACT learning model certainly has advantages and disadvantages. The advantages of the *REACT* model include: (1) the five stages are designed to build gradual understanding starting from the basic understanding at the *applying* stage to a deeper understanding at the *transferring* stage (Anas & A, 2018), (2) involving active student participation and linking learning to real-world contexts and (Putri & Santosa, 2015; Feby & Abadi, 2020), (3) designed to create a varied and fun learning atmosphere (Junedi & Ayu, 2018), (4) is collaborative to provide a broader understanding and build confidence by boldly conveying ideas and opinions in front of other students (Rizka, Syarifuddin, & Suherman, 2014) . In addition to some of the advantages above, this model certainly has disadvantages, including: (1) the difficulty of providing contextual examples in the context of everyday life (Selamet, Sadia, & Suma, 2013), (2) it takes a long time in its application and requires creativity, innovation and special communication (Riadi, 2022).

The *REACT* model is seen as a model that is able to involve the active participation of students in the learning process through its five stages, namely: (1) *Relating,* a learning stage that connects with previous knowledge; (2) *Experiencing,* stages that provide students with a learning experience that includes problem-solving and other activities; (3) *Applying,* implementing the concepts he learned by doing practice questions; (4) *Cooperating,* interacting with other students in the learning process; (5) *Transferring*, applying concepts in different contexts (Fauziah, 2010). COR (*Center for Occupational Research*) defines and

describes the stages of the *REACT* model, including the following: (1) *Relating* is a stage that connects the knowledge to be learned with students' understanding and circumstances in everyday life; (2) *Experiencing* is a stage that leads students to discover or explore basic concepts that require critical thinking through the inquiry method; *(3) Applying* is a stage that directs students to apply accepted concepts in solving mathematical problems and in everyday life; (4) *Cooperating* is a stage in which students learn together, share and communicate with each other with the aim of training the cooperation of teachers and students as citizens who essentially coexist with others; (5) *Transferring* is a stage that leads students to apply knowledge and experience to acquire new things (Fatimah, 2022).

Based on several theoretical studies regarding the stages of the *REACT* learning model, the stages that will be adopted and applied in this study are as follows: (1) *Relating,* students are given apperception questions that are associated with application in real life and practice questions to relate them to their previous knowledge; (2) *Experiencing,* a stage that provides space for students to try to recognize new concepts given through discussion of questions; (3) *Applying,* students apply new knowledge gained by solving contextual problems; (4) *Cooperating*, students are given space to discuss with the teacher or in study groups, (5) *Transferring,* a stage that directs students to solve problems individually in the form of *quizzes* or do independent exercises.

The Relationship of the REACT Model to Mathematical Anxiety

Mathematical anxiety correlates with students' mathematical abilities. Some studies state that students with low levels of anxiety have good mathematical abilities and are able to take responsibility for their tasks (Diana, Marethi, & Ultimate, 2020; Fani & Effendi, 2021). In addition, a competitive learning climate, less friendly teacher responses, irrelevant teaching and assignments, strict and rigid classroom policies or learning systems also cause anxiety in students (Yanti, Erlamsyah, & Zikra, 2013). Mathematical anxiety problems can be overcome by creating a varied and enjoyable learning process (Dwirahayu & Mas'ud, 2018). Varied learning can be seen in five different stages that can be filled with various activities according to the teacher's creativity that actively require student participation. In line with the opinion of {Formatting Citation} that each stage in the REACT model has a different activity where students are required to be actively involved, especially when the stages of experiencing students can explore inside or outside the classroom together with friends so that the learning atmosphere can overcome boredom. Nabilah, Umam, Azhar, & Purwanto (2021) added that mathematical anxiety can be overcome by creating a comfortable and pleasant learning atmosphere and presenting contextual learning by providing problems relevant to the student's situation. However, in the application of these five stages, it requires the readiness and creativity of teachers in designing activities, choosing the right topic that is more optimal if taught using the REACT model, especially in the experimental stages that require exploration and contextual examples according to the context of students, the environment, and learning tools and media (Ismaya, Subiki, & Harijanto, 2015)

The *REACT* model with its 5 stages is considered capable of being a solution to the problem of mathematical anxiety. The *REACT* model provides a space for all students to be actively involved in the learning process so that it becomes effective and meaningful learning that helps students understand and master concepts (Sinaga & Silaban, 2020). The *REACT* model supports the development of cognitive aspects when constructing one's own knowledge as well as relating previous understandings with new knowledge received (Dance & Rosana, 2019). The *REACT* model accommodates heterogeneous learning styles by providing space for active participation of students with their respective learning styles (Dewi & Utami, 2020). The *REACT* model is collaborative so that it can increase extrinsic motivation in the learning process (Nuraisah, Irawati, & Hanifah, 2016).

The *REACT* model has been proven to be able to improve the ability of mathematical processes that have been formulated by NCTM (*National Council of Teachers of Mathematis).* The application of the *REACT* model in class X science in one state school in Bukittinggi shows an increase in understanding of mathematical concepts and student confidence (Ramadhani & Jazwinarti, 2019). In addition to improving the ability to understand concepts, in their research Erwina, Jamal, & Hartini (2015) showed that the *REACT* model is successful in improving students' problem-solving abilities because in 5 stages it provides space for students to be actively involved in applying material in various forms of problems. The *REACT* model is able to facilitate in improving the problem-solving skills, mathematical connections and *self-efficacy* of students in class XI science at state high schools in Magelang rather than conventional learning models (Putri & Santosa, 2015). The application of *the REACT* model in mathematics learning is positively correlated with students' mathematical communication skills and self-confidence (Sapto, Suyitno, & Susilo, 2015). Furthermore, the *REACT* model successfully improved students' mathematical reasoning (Febryanti, Samad, & Wendi, 2021).

All of the results of the research and theory above show a correlation between the *REACT* learning model and students' mathematical anxiety. The REACT learning model has been proven to improve students' mathematical abilities. As well as one of the factors that affect mathematical ability is mathematical anxiety. In line with the results of research Anouti, Shehayeb, & Mchiek (2018) that mathematical anxiety does affect students' math performance. Students with good mathematical ability have low math anxiety. Thus, this presentation concludes that the REACT learning model is related to mathematical anxiety.

RESULT AND DISCUSSION

The REACT learning model is applied two times in 2 meetings consisting of synchronous and asynchronous activities carried out face-to-face in mathematics subjects in class X social studies during PPL 2. The material about absolute value discussed in the two meetings has only been known by students and has never been discussed at the secondary education level. According to the school system, teachers apply these five stages of the model in learning, namely the division of class modes into synchronous and asynchronous sessions. At the first meeting of the REACT model, the teacher started the lesson by praying, sharing positive energy in the classroom, saying hello, giving smiles, and inviting students to play

games to create a pleasant learning atmosphere. Then direct students to prepare for learning by preparing all learning equipment. The teacher also tells the learning flow, activities, and objectives of the learning activities to be carried out. Here is the implementation of the REACT model when implementing PPL 2 onsite in class X IPS.

Table 2. Proof of REACT model deployment

Session	**Stages**	**Implementation**	
		Meeting 1	Meeting 2
Synchronous	*Relating*	Provides apperception questions related to the definition of absolute value and its application in everyday life	Students do questions to remind the implementation of the basic concept of absolute value
	Experiencing	Students do six snatching questions in front of the class	Students recognize the properties of absolute value by working on questions
	Applying	The teacher gives each student a different question personally	Students work on guided exercises related to the traits of absolute value
	Cooperating	Students discuss privately with the teacher while going around to answer students' questions (*one-on-one discussion)*	In groups doing application questions
Asynchronous	*Transferring*	Students do the assignment and can discuss it with their friends	Students take quizzes related to the definition and characteristics of absolute value
Quiz	**Paper-based quizzes are done face-to-face in asynchronous sessions**		

The first stage, namely *relation*, begins by providing apperception questions related to the definition of absolute value and the application related to number lines. When the question was given, students said they were still confused by the question. The teacher tries to simplify again by explaining the concept of spacing on number lines using tiles. Only after being given 2 examples can students answer the question of apperception. This stage takes a lot of time, but it must still be done so that students understand the concept correctly and can move forward in the next material.

Giving apperception questions by relating previous knowledge and new knowledge as well as in a real-world context will build awareness, generate motivation and focus students' attention to participate in learning (Mariska, Kurniawan, Setyadi, & Fatmaryanti, Siska, 2013). If the student's attention has been focused on learning, it will help the student to concentrate. Concentration is a centralized attention to a certain thing (Nuryana, 2010). Furthermore, Sulastri (2016) said that the activity of linking learning with the real world helps students find the meaning of the material being studied so that they better understand learning.

In the second stage, namely *experiencing,* the teacher gives questions related to the application of the definition of absolute nia on the board and provides an opportunity for students to work on it in front of the class. Then at the second meeting with the learning objective of recognizing and applying the traits of absolute value, the teacher guides the students through the work on the questions. This activity is carried out with the aim of inviting students to develop their mathematical thinking skills. As a boost to enthusiasm, teachers give *rewards* to students who are willing to do it.

At the *applying stage,* students are given the opportunity to do practice questions independently which will later be discussed together. Students are asked to find an x grade by using the definition of absolute grade when working on independent exercises. Working on questions to find or apply a concept becomes more effective for improving memory than directing students to memorize (Saputra, 2014). The stages of *experiencing* and *applying* provide opportunities for students to construct their knowledge. Masitoh & Prabawanto (2014) said that by constructing their own knowledge, students will find it easier to understand learning and have an impact on increasing their mathematical abilities. Therefore, these two stages can be a solution to improve students' mathematical abilities.

At the second meeting of the application of this model, the teacher collaborated on the *applying* and *cooperating* stages in which students were asked to do questions in study groups of 3-4 students. In this study group, students are expected to share ideas with each other to solve problems. In addition, students who already understand are expected to be willing to teach concepts that are not yet understood by their other friends. This is supported by Sugiawan, Nurhanurawati, & Coesamin (2014) that group learning gives students space to share opinions, exchange ideas, help each other, and increase student motivation to understand learning. MZ, Rendani, Nainggolan, & Jannah (2018) also in their research said that cooperative learning with cooperation in groups overcomes students' anxiety because they understand that their friends have the same problem and form positive interactions during learning. This stage becomes a fun new color in the learning process. This is obtained from the reflection of students who state that "learning is difficult but fun". A pleasant learning environment affects students' sense of self-confidence, fear and anxiety in the learning process (Hannah, 2013).

The last stage in the learning process is *transferring.* At this stage, the teacher invites students to do contextual application questions independently and will later be discussed in groups. In this stage the active participation of students is very noticeable. Although there are some students who have not been able to do their own work, they are already willing to ask the teacher about things that are not yet understood. Students have also begun to get to

know the styles and ways of learning that are effective for them. Referring to the results of the reflection, there are students who say that it is easier to understand if the teacher explains it personally. This is accommodated when the teacher gives questions personally and goes around giving explanations for students who ask questions.

Analysis

This research uses a qualitative approach with observation methods to review student anxiety in mathematics learning. The instrument in this study is in the form of a questionnaire that has been used in previous studies by Anouti, Shehayeb, & Mchiek (2018). Then the statements in the instrument are modified according to the situation and context of the student and the student's learning environment using a Likert scale. Data collection is carried out online with the help of *google form.* The results of filling out the questionnaire conducted by 19 students were declared valid because each student only filled out the questionnaire once by choosing 1 option that describes what students have experienced in learning. Then, 1 week later students were given the same questionnaire and each of them received the questionnaire for the second time and obtained almost the same answer twice. Furthermore, the data is processed by dividing 2 categories, namely the percentage of students who choose the answer agree (A) and strongly agree (SA) means that confirming the statement has been experienced in learning and the percentage of students who choose the answer disagrees (D) and strongly disagrees (SD) will also be combined which means rejecting the truth of the statement happening to them.

Table 3. Percentage of anxiety before applying REACT

Indicators	Statement	Before (%)			
		A	SA	D	SD
Concentration	I have difficulty concentrating in learning math as much as it is difficult to focus, tend to forget what was just taught or at the previous meeting	21,1	47,3	26,3	5,3
Expectations Failed	I often expect to fail and will not get a passing grade when doing assignments, quizzes, or math exams	42,1	26,3	26,3	5,3
Confused	I tend to be confused about applying formulas when I want to do problems, confused about understanding mathematics because it is quite complex and less relevant to life	10,5	57,9	26,3	5,3
Self-ability	I feel unable to do math problems by myself, and find it difficult to understand some things related to mathematics	31,6	31,6	31,6	0
Confidence	I dare to ask a friend or teacher if I don't understand mathematics	15,8	26,3	42,1	15,8

	I feel confident only when I can understand the material and solve math problems	36,8	42,1	15,8	5,3
Fear	I am afraid to do the questions in front of the class if asked by the teacher	31,6	21,1	42,1	5,3
Restless	I feel restless during math learning	15,8	26,3	47,4	10,5
Overthinking	I am easily overthinking if I don't understand the material or math problems	42,1	21,1	26,3	10,5
Nauseous	I feel nauseous when I study math	0	15,8	42,1	42,1
Headache/dizziness	I feel headaches when studying or doing math assignments	42,1	21,1	15,8	21,1
Fast Heart Rate	My heart often flutters when I want to do quizzes or math exams	31,6	42,1	21,1	5,3

After obtaining the above results, the teacher saw that most of the students in class X social studies were shown to experience mathematical indicators of anxiety. Seeing this in the next 2 meetings consisting of *synchronous* and *asynchronous activities,* the author designed learning by applying the REACT learning model. On August 25, the teacher again gave a questionnaire with modifications to several statements that correspond to the implementation of the REACT model in the learning process, and the following results were obtained:

Table 4. Percentage of anxiety after applying REACT

Indicators	Statement	After (%)			
		SA	A	D	SD
Concentration	Learning mathematics like this really helps me to concentrate on learning	21,1	63,1	15,8	0
Expectations Failed	Mathematics learning that provides an opportunity to work on exercises together working in groups, conceptually and purposefully encouraged me to dare to try without focusing on failure	42,1	47,4	10,5	0
Confused	Learning mathematics with practice problems and examples of application in everyday life made me begin to understand its use and the stages of its work when doing problems	15,8	63,1	15,8	5,3
Self-ability	I better understood the concept of absolute value equation and began to be able to do absolute value questions because the learning was interactive, contextual, and collaborative	31,6	42,1	26,3	0
Confidence	I dare to try to ask a friend or teacher if I don't understand mathematics	26,3	42,1	26,3	5,3
	This kind of math learning fosters confidence that I have the capacity to learn math	31,6	42,1	26,3	0

Fear	I am afraid to do the questions in front of the class if asked by the teacher	5,3	26,3	57,9	10,5
Restless	I began to enjoy structured, applicative, and varied learning like this	57,9	42,1	0	0
Overthinking	Conceptual, directed, and collaborative mathematics learning helps me not to overthinking quickly when I am not able to understand or do problems	42,1	42,1	15,8	0
Nauseous	I feel that learning mathematics in this way makes me feel nauseous	0	10,5	52,6	36,8
Headache/dizziness	Learning math with a lot of activities like this gives me a headache	0	21,1	47,4	31,5
Fast Heart Rate	My heart often flutters when I want to do quizzes or math exams	10,5	26,3	57,9	5,3

After obtaining the answers before and after the implementation of the REACT learning model, here is the percentage change in the answers obtained:

Table 5. Accumulation of the percentage of decreased and increased in indicators of student anxiety before and after applying REACT

Indicators	Before	After	Increased (I)/ Decreased (D)
Concentration	31,6%	84,2%	I - 52,6%
Expectations Failed	68,4%	10,5%	D - 57,9%
Confused	68,4%	21,1%	D - 47,3%
Self-ability	31,6%	73,7%	I – 42,1%
Confidence	31,6%	71,5%	I – 39,9%
Fear	52,7%	31,6%	D – 21,1%
Restless	42,1%	0%	D - 42,1%
Overthinking	63,2%	15,8%	D – 47,4%
Nauseous	15,8%	10,5%	D - 5,3%
Headache/dizziness	63,2%	21,1%	D - 42,1%
Fast Heart Rate	73,7%	36,8%	D - 36,9%

In the first indicator there was an increase of 52.6%. Concentration begins to build at the *stage* where the teacher directs students to focus through the provision of apperception questions that relate learning to the context of everyday life. This is in line with the research of Mushawwir & Umar (2014) that giving apperception can foster students' attention, interest and concentration towards something, because the lesson must be built on pre-existing

knowledge. The second indicator showed a decrease of 57.9%. Through the application of this model, Christian teachers help students build a gradual understanding of concepts from the relating to the applying stage by providing apperceptions, explanations and practice questions independently or in groups, as well as providing an understanding that students must continue to strive and be humble in asking God for help to be able to do everything well. All things are God's gifts, not the result of man's efforts (Ephesians 2:8-9). In his research Zamili (2018) said that one way to overcome students who expect to fail in their abilities formed by failing experiences and viewing self-abilities as lacking is to integrate knowledge, skills and values in the learning process. Thus, it will build the student's confidence in himself that he will be able to do his duties and responsibilities.

The third indicator showed a decrease of 47.3%. The *stages of relating* and *applying* help students to find meaning and apply the knowledge they receive. Confusion can be overcome by leading students to understand concepts correctly so that later they are able to relate problems or mathematical problems given with mathematical symbols (Kholiyanti, 2018). Subsequently, the fourth indicator increased by 42.1%. The improvement of students' ability to learn mathematics is in line with research A and Anas (2018) that the REACT model helps students build mathematical understanding gradually from the applying to transferring stages so that it can streamline students' thinking skills.

The fifth indicator increased by 39.9%. Students feel more confident doing every class activity whether it's asking or answering questions. This is supported by the presence of teachers and friends in the study group who are willing to share with each other. The sixth indicator decreased by 21.1%. This fact is supported by the reflection and response of students during learning. In the midst of difficulties learning mathematics, students seem to be no longer afraid to participate in every learning activity. Students seem to be able to adapt and enjoy the learning process. This affected the physiology of students so that the percentage of students who felt restless (indicator 7) was 42.1%, *overthinking* (indicator 8) was 47.4%, felt nauseous (indicator 9) by 5.3%, dizziness/headache (indicator 10) by 42.1%, and a rapid heartbeat (indicator 11) by 36.9%. Summarizing the discussion above, it is known that the *REACT* model has succeeded in reducing students anxiety about mathematics learning. This is shown by a decrease in the percentage of students' mathematical anxiety in learning mathematics. These results are in line with the increasing active participation of students in participating in each learning activity.

As an *imago dei creation,* anxiety should not be the controller of human life. God, who created man, has the power to sustain and enable man in his weaknesses and limitations as a creation (Ferguson, 2002). The Fall in sin results in the distortion of God's image in man (Addai-Mensah, 2020). The damage includes thoughts, words, deeds and all aspects of the human being including perspectives that have deviated from the right thing (Driscoll & Breshears, 2020). The relation in mathematics learning is that sinful nature leads students to see themselves as a person who does not have enough ability to learn mathematics.

God gives special revelation of the person of Christ and the word of God to renew the image and likeness of God in man (Bavink, 2011). God's Word allows us to see God and all

existing realities correctly (Johnson, 2015). Christ's renewal affects the perspective of man, especially students, in seeing himself. By realizing reality as an *imago dei* that has been redeemed and bestowed with the word of God, students should be able to work on the abilities that exist within themselves and look at mathematics beyond numbers, formulas, symbols on paper, but through it increasingly see the majesty of God. In line with Jongsma's (2007) opinion that mathematics is part of God's work given to know God and see the beauty of His creation. With mathematics man can learn and explore God's creation through which he can also learn at a glance the character of God (Lowe, 2011).

The REACT learning model is one of the alternatives that can be used by Christian teachers to present mathematics learning that can accommodate student needs while maximizing their capacity. To find out these needs, it is necessary to have a relationship between teachers and students. An authentic relationship between teacher and student can only occur when the teacher perceives and accepts the student as a unique individual both emotionally, intellectually, spiritually, physically and socially (Johnson, 2015). In Christian education that makes Christ *Christ-centered*, teachers are enabled to view students as *imago dei* specially created and unique in these five aspects (Parinding & Tangkin, 2022). Thus, the learning process designed, especially mathematics learning, will direct students' eyes to see the process to equip students to do God's good work. Some of the important things that Christian teachers instill when applying this model are: (1) teachers and students always start learning by praying in a Christian way (2) teachers also instill Christian values in students just as students must always surrender and be humble to ask God for help in the learning process, not meme selflessness because everything comes from God, (3) at the stage of relating the teacher invites students to explore the work of God encountered in everyday life to see the learning more contextual and relevant to the student, (4) at the transferring stage also the teacher invites students to see the consistent and detailed nature of God in creating so that the concepts used in the equation of absolute value can be used to solve problems in different contexts.

CONCLUSION

The above study and discussion lead to the conclusion that the application of the model *REACT* With its five stages it can reduce students' math anxiety. First, at the stage *relating* the teacher guides students to relate the material learned to the student's initial understanding by providing apperception questions that are also associated with the context of everyday life. Second, *at the stage of experiencing* the teacher directs students to be able to experience firsthand the learning by doing practice questions. Thirdly, at the stage of applying teachers provide space for students to apply the knowledge that has been learned by doing questions. Fourth, at the stage *of* cooperating teachers give different questions to each student and hold *one-on-one discussion* for students who have obstacles. After that, the teacher also gave questions that will be discussed in the study group. Fifth, at the stage of *transfer* The teacher facilitates and guides students to apply the concepts learned in different problem contexts with the provision of varied applicative questions.

In the two meetings of applying this model, the decrease in students' math anxiety was also seen when students began to enthusiastically participate in every class activity, race to finish practice questions before class ended, and dare to ask teachers and friends during learning and during group study sessions. During the implementation of the *REACT* model in two meetings, there was a drawback, namely that this implementation took a long time because it had to adjust to the grasp of each student when participating in activities in each stage. Therefore, it is clearly seen that the *REACT* model cannot stand alone. The successful application of this model is inseparable from the role of a teacher, especially a Christian teacher. Looking upon the great God and man created in the image of God, enables teachers and students to maximize the capacity God gives and becomes the basis for building relationships.

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